

**Remarks**

Claims 1-55 were originally filed in this application.

Previously withdrawn claims 1-14, 22-24, 39-40, 46-47, 49, 51, and 53-55 were previously canceled without prejudice or disclaimer to facilitate prosecution of this application.

Previously withdrawn claims 15-21, 33-36, and 52 have been rejoined with pending claims 25-32.

Claims 37-38, 41-45, 48, and 50 remain withdrawn from consideration as being drawn to non-elected inventions.

Claims 18 and 26-27 are currently canceled without prejudice or disclaimer.

Claims 15, 25, 29, 33, 35, 36, and 52 are currently amended to clarify some of the aspects and features of the invention. No new matter is added and support for the amendments can be found throughout the specification, claims and drawings as originally filed, including, for example, at Example 3.

No new claims are added.

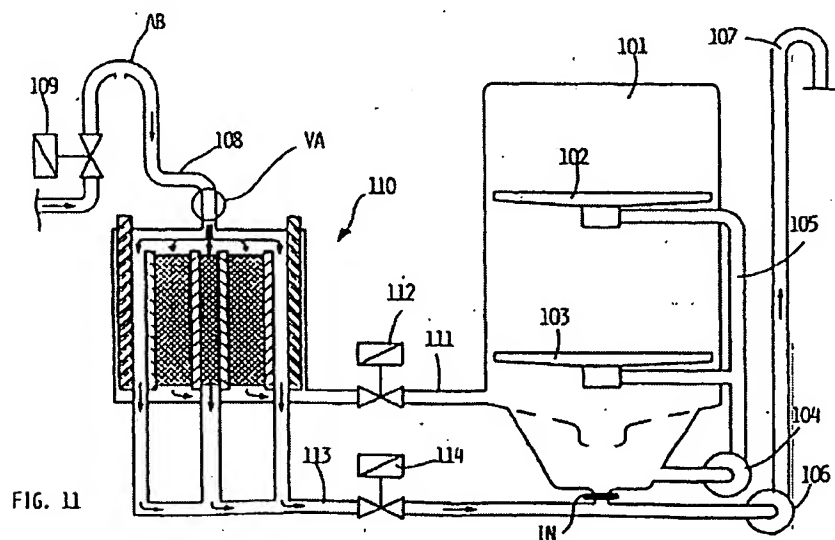
Claims 15-17, 19-21, 25, 28-36, and 52 thus remain pending for examination, with claims 15, 21, 25, 33, and 52 being independent claims.

**Rejections under 35 U.S.C. § 103**

Claims 15-21, 25-36, and 52 were rejected under 35 U.S.C. § 103(a) as would have been obvious over the disclosure of Gadini in International Publication No. WO 01/30229 (hereinafter "Gadini") in view of the disclosure of Gaysowski in U.S. Patent No. 3,074,864 (hereinafter "Gaysowski").

Applicants disagree that the respective subject matter of each of independent claims 15, 21, 25, 33, and 52 would have been obvious over Gadini in view of Gaysowski because no valid *prima facie* case of obviousness has been set forth.

As previously noted, Gadini discloses a household appliance using water with a supply system, a softening system for at least a portion of the supplied water, and a control system. The appliance uses a permanent water softening means which are controlled by the control system and do not require periodic intervention by the user. (Gadini at Abstract.) At page 25, lines 20-23 and with reference to FIG. 11 (reproduced below), Gadini explains that the metering of the softened water can be performed by utilizing valves 109, VA, 112, and 114 through the use of a standard pressure-switch or turbine flowmeter or by means of metering tanks or dosing containers. At lines 10 *et seq.* of page 25, Gadini explains that during use of the decalcifier 110, the ion concentration, *e.g.*, calcium and magnesium ions, in the concentration channel CC increases, as well as in the electrode channels CE1 and CE2. When valve 114 is open and the intercepting device IN is closed, the water from channels CE1, CE2, and CC flow through duct 113 and discharges through duct 107. (Gadini at page 25, lines 15-17.)



Notably, Gadini fails to disclose a positively-charged flow regulator connected downstream of a concentrating compartment of an electrochemical device, a positively-charged flow orifice, a controller operatively coupled to regulate applied positive electrical charge on a flow regulator according to a predetermined schedule, a concentrating compartment fluidly connected upstream of an anode compartment, a

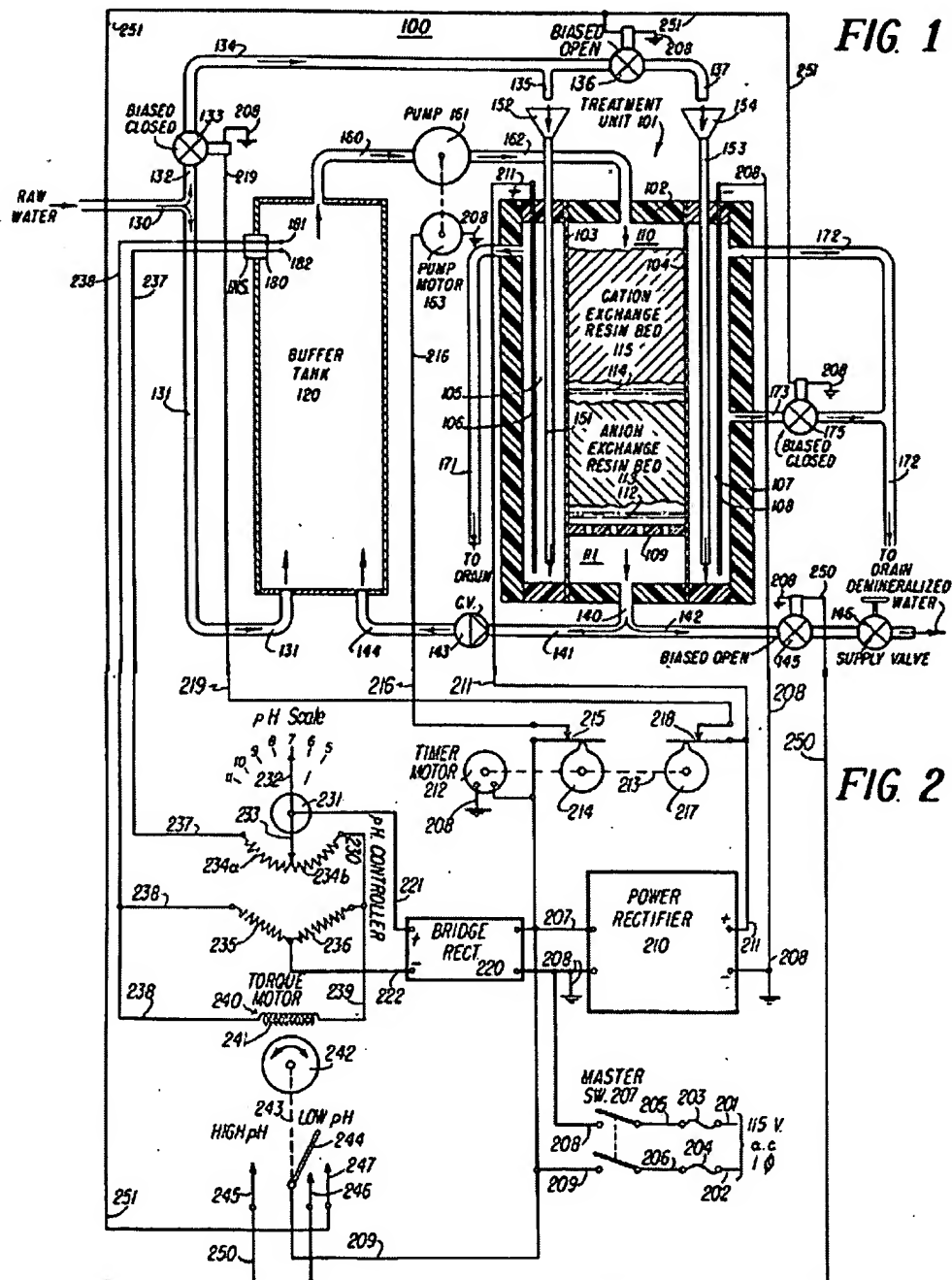
depleting compartment fluidly connected to a cathode compartment, or a means for discharging waste stream from a concentrating compartment according to a predetermined schedule. Gadini also does not disclose an electrodeionization device.

Gaysowski also does not teach or suggest any of these limitations in the manner claimed in independent claims 15, 21, 25, 33, and 52 and the claims respectively dependent therefrom.

Applicants maintain that Gaysowski teaches energizing a solenoid to actuate the valve to open or close, which differs from applying and/or maintaining a positive charge on a flow regulator; this latter aspect does not change the flow rate of the fluid flowing through the flow regulator. Gaysowski, at column 3, lines 3 *et seq.*, with reference to FIGS. 1 and 2 (reproduced below), explains that the demineralizing system 100 comprises a treatment unit 101, a buffer tank 120, a raw water supply pipe 130, and a demineralized supply pipe 140. An outlet of chamber 111 of the treatment unit 101 connects to a first pipe 141, which conveys treated water to buffer tank 120 and to a second pipe 142, which delivers the treated and demineralized water to a point of use. (Gaysowski at column 4, lines 40-45.) The delivery pipe 142 has a normally open solenoid operated valve 145 and a supply valve 146 which is preferably manually operated. (Gaysowski at column 4, lines 53-55.) Probes 181 and 182 are operative to sense the pH of the water in buffer tank 120 and connected to the bridge of pH controller 230. (Gaysowski at column 7, lines 52 *et seq.*) When a sufficient change in resistance between probes 181 and 182, indicating a sufficiently high or low pH, is communicated to the pH controller, the bridge thereof “unbalances” and causes arm 244 to move toward contacts 245 or 246, thereby applying a potential from a conductor 209 to a conductor 250 to the solenoid of valve 145, moving the valve from the normally open position to the closed position. (Gaysowski at column 7, lines 60 *et seq.* and at column 8, lines 61-70.)

A normally closed valve 175, disposed at line 173, regulates flow of fluid from a catholyte compartment 107. (Gaysowski at column 5, lines 32-43.) When a solenoid of valve 175 is energized, valve 175 can be opened to allow catholyte fluid from chamber 107 to drain by way of pipe 172. (Gaysowski at column 5, lines 39-43 and at column 6,

22 *et seq.*) Gaysowski teaches that the solenoid of valve 175 is actuated based on the pH of the fluid in buffer tank 120. (Gaysowski at column 6, lines 30 *et seq.*) Gaysowski does not teach or suggests applying a positive charge on a flow regulator according to a predetermined schedule.



Gaysowski also does not teach or suggest an electrodeionization device, or a device with a concentrating compartment, much less a concentrating compartment having ion exchange media therein. Neither of Gadini nor Gaysowski teaches or suggests flow a regulator downstream of a concentrating compartment, or a flow regulator comprising a flow orifice. At best, Gaysowski discloses a valve 175 downstream of catholyte compartment 107, which does not have an applied positive charge. (Gaysowski at column 5, lines 32 *et seq.*)

Further, neither Gadini nor Gaysowski teaches or suggests a device having a concentrating compartment fluidly connected upstream of an anode compartment nor a device having a depleting compartment fluidly connected to a cathode compartment.

These cited references also fail to teach a power source configured to provide an applied positive charge on a flow regulator and provide an electrical current through an electrodeionization device.

Gaysowski discloses a controller 230 that actuates valve 175 based on a pH of the fluid in a buffer tank 120 but does not disclose a controller that applies a positive charge on a flow regulator according to a predetermined schedule. Gadini also fails to disclose these features.

Therefore, the subject matter of each of independent claims 15, 21, 25, 33, and 52 would not have been obvious over Gadini in view of Gaysowski because the alleged *prima facie* case of obviousness is defective as failing to rely on references that disclose or suggest each and every limitation in the manner respectively recited in these claims. The respective subject matter of each of dependent claims 16-17, 19-20, 28-32, and 34-36, each of which directly or indirectly depends from independent claims 15, 25, and 33 would also not have been obvious for at least the same reasons noted above.

Accordingly, Applicants request reconsideration and withdrawal of the rejections of claims 15-17, 19-21, 25, 28-36, and 52 under 35 U.S.C. § 103.

**Conclusion**

In view of the foregoing Amendments and Remarks, this application is in condition for allowance; a notice to this effect is respectfully requested. If the examiner believes, that the application is not in condition for allowance, the examiner is requested to call Applicants' attorney at the telephone number listed below.

If this Response is not considered timely filed and if a request for an extension of time is otherwise absent, Applicants hereby request any necessary extension of time. If there is a fee occasioned by this Response, including an extension fee that is not covered by an enclosed check, please charge any deficiency to Deposit Account No. 50/0214 (ref. no. 2003P86277US).

Respectfully submitted,  
Frederick Wilkins *et al.*, Applicants

By: /elias domingo/  
Peter C. Lando, Reg. No. 34,654  
Elias Domingo, Reg. No. 52,827  
LOWRIE, LANDO & ANASTASI, LLP  
Riverfront Office Park  
One Main Street  
Cambridge, Massachusetts 02142  
Tel. (617) 395-7000  
Attorney for Applicants

Siemens Ref. No: 2003P86277US  
USFilter Ref. No.: USF/ION/125US  
LLA Ref. No.: I0168-707919